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Safety instructions

- This unit is not intended for use by people (including children) with reduced physical, sensory or mental abilities or for those without experience and/or knowledge, unless they are supervised by a person responsible for their safety or they have been instructed on its use. Children should be supervised to ensure that they do not play with the appliance.
- Also, keep the plastic packaging out of reach for children to avoid danger of suffocation.

Danger of injuries

Preventing electric shocks

- Never open the camcorder casing or mains adapter plug except to insert the battery or the SD/SDHC card.
- Connect the mains adapter plug to a professionally installed 230 V, 50 Hz mains socket.
- To remove the mains adapter quickly and easily from the mains in an emergency, the socket must be easily accessible and close to the appliance.
- Do not bend or crush the mains cable.
- Only use the supplied mains adapter.
- Take measures to prevent moisture or liquid from penetrating the camcorder or mains adapter.
- Do not touch the mains cable with wet hands.

- Never use the camcorder if the mains adapter is damaged.
- If the mains adapter or cable is damaged, it must be replaced with a mains adapter of the same type to avoid hazards. Please contact our service in this case.
- Switch the camcorder off immediately if it malfunctions.
- Do not allow the camcorder or mains adapter to come into contact with rain or be splashed by water.
- Do not place containers containing liquid, e.g. vases, on the appliance, the mains adapter or near to these and protect all parts of the device from rain and water. The container may tip over and the liquid will impair the electrical safety.

Risk of explosion

- Never expose batteries or rechargeable batteries to excessive heat (such as direct sunlight, fire or similar).
- Do not throw batteries into a fire.
- Never short-circuit any (rechargeable) batteries.
- Do not dismantle (rechargeable) batteries.



CAUTION! Danger of explosion if rechargeable batteries are replaced incorrectly. Replace only with the same or equivalent type.

Fire hazard

- Always uncoil the entire length of the mains cable.
- Ensure there is adequate ventilation and never cover the mains adapter.
- Do not place naked flames such as lit candles on or near the unit.

Risk of poisoning

- Keep the battery out of reach of children.

Risk of chemical burns

- If the battery is depleted, remove it from the device immediately. There is an increased risk of leakage. Avoid contact with skin, eyes and mucous membranes. If these areas come into contact with battery acid, rinse them immediately with plenty of clean water and contact a doctor immediately.

Preventing damage to the eyes

- Do not use the flash close to anyone's eyes.
- When using the camera function do not direct the flash towards the eyes of people or animals.
- Always maintain a minimum distance of one metre when using the flash, especially with small children.

Preventing damage to the camcorder

- If the battery is leaking, remove it from the camcorder immediately. Clean the contacts before inserting a new battery.
- Only use the supplied lithium-ion battery.
- Before inserting the battery, check that the contacts in the camcorder and on the batteries are clean. Clean the battery connections if necessary with a clean, dry cloth or an eraser.
- Do not touch the lens or lens mounting.
- Only use the supplied mains adapter.

Preventing damage to the battery

- Always observe the correct polarity. Make sure that the plus (+) and minus (-) poles are correctly inserted to avoid short circuits.
- Never allow the battery to come into contact with liquids.
- Direct, intense heat can damage the battery. Therefore, do not expose the camcorder to any sources of direct heat.
- If the camcorder is not going to be used for long periods, remove the battery.

Preventing breakages

- Do not drop the camcorder.
- Place the strap around your wrist when carrying the camcorder.

Preventing data loss

- Never interrupt the power supply when data are being processed.

Avoid damage to SD/SDHC cards

- Never remove the SD/SDHC card from the camcorder while it is saving data.

Protecting against condensation

- Avoid rapid changes in temperature.
- Place the camcorder in its protective case or a plastic bag before exposing it to any sudden changes in temperature.
- Do not immediately connect the device to the power supply if the unit has been moved from a cold environment to a warm room. The device can safely be connected for charging as soon as the unit has reached room temperature.

Do not use or store the camcorder in direct sunlight or at high temperatures.



At low temperatures the capacity of the battery can drop significantly due to the reduced speed of the chemical reactions. When recording in cold weather keep a second battery pack in reserve in a warm place (e.g. trouser pocket). At low temperatures the capacity of the battery can drop significantly due to the reduced speed of the chemical reactions. When recording in cold weather keep a second battery pack in reserve in a warm place (e.g. trouser pocket).



This symbol on the camcorder certifies that the camcorder complies with EU guidelines (European Union) on radiated emissions. CE stands for Conformité Européenne (European conformity)



The device is intended for private use only and is not designed to be used in a heavy industrial business.

The Camcorder

Package contents

Check that the following parts have been supplied in the package:

- HD CAMCORDER
- Battery charger with mains adapter
- USB cable
- HDMI cable
- AV cable
- Storagebag
- Li-Ion battery
- Software CD
- Operating instructions and guarantee documents

System requirements

Your computer needs the following system requirements if you will be using the camera with the computer:

- 1 Intel Pentium III processor or higher
- Windows XP/Vista, Windows 7
- DirectX 9.0c or higher
- 1 GB RAM
- 1 GB free hard drive storage
- 1 x 4-fach CD-ROM drive
- 1 free USB connection

Device description

This camcorder combines the following in one easy-to-use device:

- the functions of a digital camcorder,
- a digital camera,

Instead of a viewfinder, the camcorder has a high-resolution "touch screen" LC display that lets you monitor your recordings. The "touch screen" LC display also shows the on-screen menus to adjust your settings.

The camcorder has a 5x optical zoom and can record video films at a maximum resolution of 1920 x 1080, photos at 3648 x 2736 (10 M).

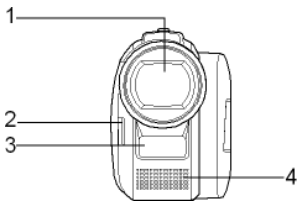
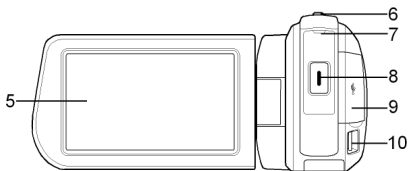
The camcorder can be easily connected to a computer via USB, or to an HD-compatible TV via HDMI.



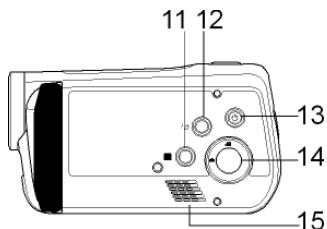
CAUTION!

To avoid damaging the screen, do not touch it with square-edged or sharp objects. Use your fingers to operate the camcorder.

Overview of the appliance

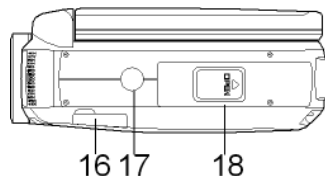
Front	Rear
 <p>Diagram showing the front view of the appliance. Callouts: 1. Lens; 2. Loop holder; 3. Flash; 4. Microphone.</p>	 <p>Diagram showing the rear view of the appliance. Callouts: 5. LC display (Touchscreen); 6. TELE/WIDE-ANGEL; 7. Operating LED; 8. Start/Stop release button; 9. Under the cover: HDMI-/USB-connection; 10. Loop holder.</p>
<p>1. Lens: 2. Loop holder 3. Flash 4. Microphone</p>	<p>5. LC display (Touchscreen) 6. TELE/WIDE-ANGEL: T: Telezoom; W: Wide-angle 7. Operating LED 8. Start/Stop release button 9. Under the cover: HDMI-/USB-connection 10. Loop holder</p>

Control panel of opened LC display



- 11. White balance button
- 12. Pre-recording / self-timer button
- 13. ON/OFF switch
- 14. Mode selector switch video/photo mode
- 15. Loudspeaker

Bottom



- 16. DC input / AV output Under the cover: DC in (for continuous operation, this connection will not charge the batteries), AV out
- 17. Tripod socket
- 18. Battery compartment / card slot

Preparation

Opening battery compartment / card slot

The battery compartment and card slot are at the bottom of the camera.

- ▶ Hold the camcorder with the battery compartment cover facing upwards.
- ▶ Slide the cover back towards the rear of the device.



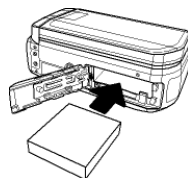
Inserting and removing the battery

- ▶ Pull the grey locking lever away from the battery compartment.
- ▶ Place the battery as shown with the lettering facing up in the designated compartment.



Always observe the correct polarity. Make sure that the plus (+) and minus (-) poles are correctly inserted in order to avoid short circuits.

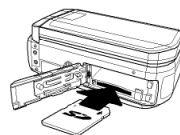
- ▶ To remove the battery, pull the grey locking lever away from the battery compartment and pull the battery out of the device.



For longer recording times the camcorder can be supplied with power by plugging the included mains adapter into the DC input of the camcorder. This will not change the charge of the battery.


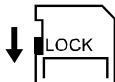
Inserting and removing the SD/SDHC memory card

- ▶ Take an SD/SDHC memory card and insert it as shown into the SD/SDHC card slot.
- ▶ To remove the memory card, press the memory card until you hear a click in the slot and then let go. The memory card will be automatically ejected a little from the slot so that you can remove the card.



Locking the memory card

If you wish to store films to the memory card, make sure that the card is not locked:

Unlocked memory card:		Locked memory card:	
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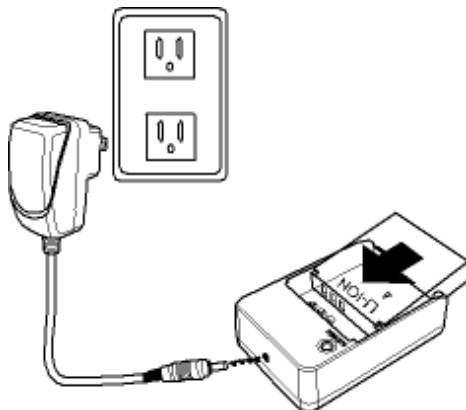
Closing the battery compartment / card slot


- ▶ To close, flip the cover shut and slide it forwards towards the front end of the device until it clicks into place.

Charging the battery

To charge the battery with the supplied battery charger, proceed as follows:

- ▶ Insert the batteries into the battery charger as shown
- ▶ Plug one end of the mains adapter into a 230 V ~ 50 Hz socket and the other end into the battery charger.




 The battery requires approximately six hours to reach full charge for the first time. The operating LED glows red during the charging procedure. The operating LED glows green as soon as the charging procedure is completed.

If the camcorder with inserted batteries is connected to the mains, the battery will not be charged.

Basic operation



Switching the camcorder on and off

- ▶ To activate the camcorder, flip up the LC display. Press the **ON/OFF button** to turn on the camcorder. The operating LED will now light up green.
- ▶ To switch off the camcorder, press the **ON/OFF button** again.
-  The quick start function sets the camcorder into **STDBY** mode by flipping shut the display (see p. 37).
- ▶ Simply flip shut the display to switch the camcorder into the "**STDBY mode**". To switch the camcorder on, simply flip open the LC display.

Changing the mode of operation

The camcorder has a recording and a playback mode.

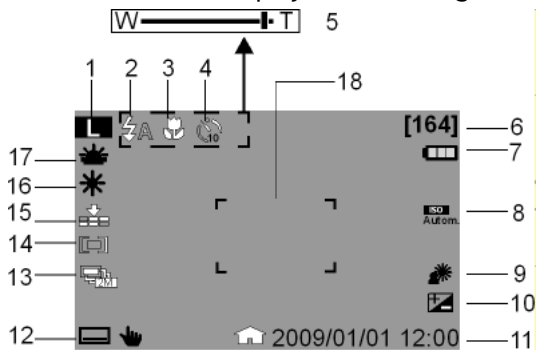
After start-up the camcorder is in recording mode. You can start taking photos or recording films immediately.

- ▶ To switch from the recording mode to the playback mode, open the menu by touching the LC display and press your finger on the playback icon .
- ▶ To return from the playback mode to the recording mode, press your finger on the camcorder icon .
- ▶ Press the **MODE SELECTOR SWITCH** to switch between photo or video mode.













Display in recording/taking photos mode

Display in photo mode

In photo mode, the camcorder will display the following information:

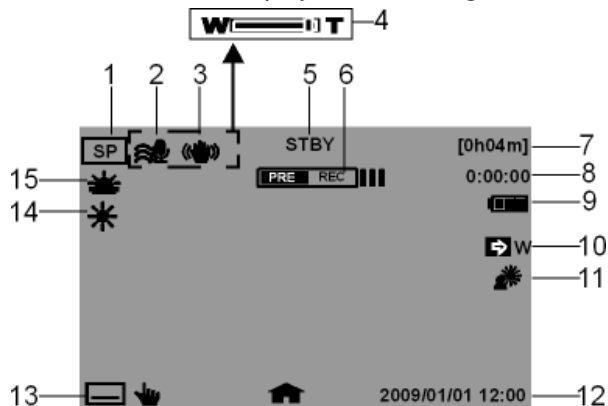


1	Photo resolution: LW = 3264 x 1840, L = Large 3648 x 2736, M = 2448 x 1840, S = 1600 x 1200
2	A Automatic flash; Red-eye reduction; Flash Off; Flash On; SL Time exposure
3	Macro functions enabled
4	Self-timer
5	WIDE ANGLE / TELEPHOTO button Zoom display: Zoom: 5x optical zoom + 10x digital zoom











6	[164] Displays the number of remaining shots in pictures at the current resolution.
7	Battery fully charged;  Battery half empty;  Low charge;  Battery empty  is displayed when operated with mains adapter
8	 Autom. Displays the currently adjusted exposure setting.
9	 Backlight
10	 Exposure correction
11	Date stamp;  Time zone 1,  Time zone 2
12	 Menu
13	Recording mode;  5 pictures in sequence at 1 MP;  2 pictures in sequence at 2 MP
14	Focus range
15	Picture quality
16	White balance
17	Scene mode

Display in film mode

In film mode, the camcorder will display the following information:




1	Movie resolution: HQ = 1920 x 1080; SP =1280 x 720 (60 Hz); LP = 1280 x 720 (30 Hz); Web = 640 x 480
2	Wind noise filter
3	Electronic stability programme
4	WIDE ANGLE / TELEPHOTO button Zoom display: Zoom: 5x optical zoom + 10x digital zoom
5	STBY recording status
6	Pre-recording active

7	[0h04m] Displays the number of remaining shots in minutes at the current resolution.
8	0:00:00 Displays the already recorded time
9	 Battery fully charged;  Battery half empty;  Low charge;  Battery empty  is displayed when operated with mains adapter
10	Indicates that the crossfade controller function is activated.
11	 Backlight
12	Date stamp;  Time zone 1,  Time zone 2
13	  Menu
14	White balance
15	Scene mode

Making recordings

Films

Proceed as follows in order to record films:

- ▶ Flip open the LC display and switch on the camcorder by pressing the **ON/OFF** button .
- ▶ Frame the desired shot with **WIDE ANGLE/TELEPHOTO**.
- ▶ Press the **SHUTTER RELEASE** to begin filming.




The microphone is switched on during filming. Sound is recorded automatically.

During filming, the time is shown on the LC display (hours: minutes: seconds).
During recording, the operating LED flashes green.

- ▶ Press the **SHUTTER RELEASE** again to stop filming.


Pre-recording

The camcorder has the additional option of starting to film three seconds before the actual recording. The pictures recorded during pre-recording are stored temporarily in the internal memory of the camcorder.

- ▶ Press the **PRE-REC/**  button to start the pre-recording function.
- ▶ Press the **SHUTTER RELEASE** to start recording.



Photos

Proceed as follows to take photos:

- ▶ Flip open the LC display and switch on the camcorder by pressing the **ON/OFF** button .
- ▶ If necessary, switch to the photo mode by pressing the **MODE** button.
- ▶ Frame the desired shot with **WIDE ANGLE/TELEPHOTO**.
- ▶ Press the **SHUTTER RELEASE** down halfway. A focusing frame appears.
- ▶ Focus on your subject and press the **RELEASE SHUTTER** down all the way.



Self-timer

The camcorder has another option of creating photos by using the "**Self-timer**".

- ▶ Press the **PRE-REC/**  button to start the self-timer.
- ▶ By pressing **PRE-REC/**  several times, choose from 2 sec self-timer time, 10 sec self-timer time or deactivated self-timer.
- ▶ Press the **SHUTTER RELEASE** to start the self-timer countdown.




Press the mode button  to switch between photo / video recording.

The photo icon  will glow green in the photo mode, and the video icon  will glow green in the video mode.


Video menu

Adjust your settings for recording films in the "**Video menu**".


In the film mode, press your finger on the LC display to access the "**Video menu**". To open the menu, simply touch the appropriate menu with your finger.






▶ To exit the menu, press the  button.

Playback menu


In the playback menu  you can view or edit your photos/films.

Scene mode

In the scene mode  you can adjust your video recording to the current recording situation. The following scene modes are available:

	Sunset	The reddish colour is enhanced to add mood to recorded sunsets.
	Portrait	The subject is focussed but the background remains blurred.
	Scenery	Broad landscapes are emphasized to a greater extent.
	Candlelight	The colour of the picture is changed while taking the shot - the picture appears "warmer".
	Beach/Snow	This setting prevents "overexposure" while taking pictures at the beach or in the snow.
	OFFOFF	All scene effects are deactivated.

Aperture


In the aperture menu  you can adjust the transition at the beginning or the end of the video recording.

- ▶ To show the image at the start of recording in black or white, set the option "Show" to black or white.
- ▶ To hide the image at the end of recording in black or white, set the option "Hide" to black or white.





The function is switched off automatically when you press the **START/STOP button** at the end of recording.

Setting

In the settings menu  you can configure diverse camcorder settings or system settings, such as full screen view, date & time or recording mode (see p. 35).

Video mode

In video mode, you can change diverse video settings, such as recording mode, digital zoom, EBS, wind cut (wind noise filter) and white balance.

To access the video menu, first open the settings menu by pressing . Change the top tab by pressing .

Shooting mode

Set the resolution in which the camcorder is to record here.

The following settings are available:

<i>Setting</i>	<i>Explanation</i>
HQ (high)	Select this setting for a resolution of 1920 x 1080, 30 Hz.
Standard	Select this setting for a resolution of 1280 x 720, 60 Hz.
Low	Select this setting for a resolution of 1280 x 720, 30 Hz
WEB	Select this setting for a resolution of 640 x 480.



The camcorder displays the remaining shooting time in the corresponding resolution in hours/minutes.

Digital zoom

Turn the digital zoom **ON /OFF** here.

- ▶ Select **OFF** to deactivate the digital zoom.
- ▶ Select **ON** to activate the digital zoom. The picture can now be digitally magnified tenfold.

E.I.S.

Turn the **E**lectronic **I**mage **S**tabilizer **ON/OFF**:

- ▶ Select **OFF** to deactivate the image stabilizer.
- ▶ Select **ON** to activate the image stabilizer.




As soon as the Electronic Image Stabilizer is activated, the  icon appears on the LC display.

Wind noise

Turn the "Wind Cut" function **ON /OFF** here. The Wind Cut function is used to reduce any wind noises during the shot.






- ▶ Select **OFF** to deactivate the "Wind Cut" function.
- ▶ Select **ON** to activate the "Wind Cut" function.



As soon as the "Wind Cut" function is activated, the  icon appears on the LC display.

White balance

Set the camcorder to the colour temperature of the light at the location for filming here.


- ▶ Select **AWB** to activate the Automatic White Balance.
- ▶ Select  to set the camcorder to daylight recording.
- ▶ Select  to set the camcorder to reduced daylight recording.
- ▶ Select  to set the camcorder to light bulb light recording.
- ▶ Select  to set the camcorder to fluorescent light recording.
- ▶ Select  to manually set the white level of the shot.

Set the exposure as described on.


Photo menu

Adjust your settings for photographs in the "**Photo menu**".


In the **photo menu**, touch the LC display with your finger to access the "**Photo menu**". To open the menu, simply touch the appropriate menu with your finger.

▶ To exit the menu, press the  button.


Playback menu






In the playback menu  you can view or edit your photos/films.

Scene mode

In the scene mode  you can adjust your photograph to the current shooting situation (see p. 27).

Flash

In the flash menu  you can adjust the flash to the current exposure situation. The following flash modes are available:

	Auto	The flash is triggered automatically as soon as additional lighting is required.
	Anti red-eye	The flash is triggered twice in succession to reduce the "red-eye effect".
	Forced	The flash is triggered each time you press the shutter release.
	Time exposure	The flash is triggered with slow shutter speed.
	Switched off	The flash is deactivated and will not trigger.

Setting


In the settings menu  you can configure diverse camcorder settings or system settings, such as full screen view, date & time or recording mode (see p. 24).

Photo mode

In the photo mode you can change different photo settings, such as image size, quality, operating mode, ISO, white balance, focus range, macro, auto-preview, metering and grid.



To access the photo menu, first open the settings menu by pressing . Change the top tab by pressing .

Image size

Set the resolution for the pictures that the camcorder should take:

<i>Setting</i>	<i>Explanation</i>
LW	Select this setting for a resolution of 3264 x 1840.
L	Select this setting for a resolution of 3648 x 2736.
M	Select this setting for a resolution of 2448 x 1840.
S	Select this setting for a resolution of 1600 x 1200.






The camcorder displays the remaining storage capacity in the corresponding resolution in hours/minutes.

Quality

Before shooting, set the image quality of the photo here.






Please note that pictures with a higher quality will need more storage space.

- ▶ Select  Superfine to obtain the best possible picture quality.
- ▶ Select  Fine to obtain a balanced quality.
- ▶ Select  Normal to use the least storage capacity per picture.

Operating mode

Set the operating mode function of the camcorder in the photo mode here.

- ▶ Select  to take just a single photo.
- ▶ Select  to take a series of photos with a resolution of 2 MP.
- ▶ Select  to take a series of photos with a resolution of 10 MP.

ISO

Set the light sensitivity of the camcorder here.



For poorly/insufficiently lit locations, choose a higher ISO value; for properly / better lit locations, choose a lower ISO value.

- ▶ Select **Autom.** to let the camcorder automatically set the light sensitivity.
- ▶ Select ISO **50** to set a light sensitivity value of 50 ISO.
- ▶ Select ISO **100** to set a light sensitivity value of 100 ISO.
- ▶ Select ISO **200** to set a light sensitivity value of 200 ISO.

White balance

Set the camcorder to the colour temperature of the light at the location of filming here (see p. 28).

Exposure

Set the exposure value manually here. Under difficult light conditions, the automatic exposure function of the camera could lead to incorrect readings and thus to incorrectly exposed pictures.


- ▶ Use **LEFT** ◀ / **RIGHT** ▶ to select the desired exposure correction value and exit the menu by pressing ⏮.




You can choose a value between -2.0 EV and +2.0 EV.

Focus range

Set the focus range here for the camcorder to focus.

- ▶ Select  for the camcorder to automatically detect the position of a face and to automatically adjust the focus.

Select  so that the camcorder focuses on the centre of the picture.

Macro

Switch the macro functions On/Off here.

- ▶ Select **OFF** to deactivate the macro function.
- ▶ Select **ON** to activate the macro function.




Auto preview

Set the auto preview here.

- ▶ Select **OFF** to deactivate the auto preview function.
- ▶ Select **0.5 sec** to display the picture for 0.5 seconds after shooting.
- ▶ Select **1 sec** to display the picture for 1 second after shooting.
- ▶ Select **3 sec** to display the picture for 3 seconds after shooting.

Metering

Set the range for the camcorder to measure the light conditions.

- ▶ Select  to measure the exposure at several points within the scene range.
- ▶ Select  to measure the exposure at the central picture element.
- ▶ Select  to measure the average exposure within the entire image range.

Grid





Set guide lines to help you photograph subjects.

- ▶ Select **OFF** to deactivate the guide lines.
- ▶ Select **ON** to activate the guide lines.

„Settings“ menu

In the settings menu you can configure diverse camcorder settings and system settings, such as full screen view, date & time or the recording mode.

You can call up the settings menu in either the recording mode or playback mode.

- ▶ To access the settings menu, open the menu by touching the LC display with your finger and pressing the settings menu icon .
- ▶ To switch from the settings menu to the system settings menu, press your finger on the system settings menu icon .
- ▶ To access the film settings, press your finger on the camcorder icon .
- ▶ To access the photo settings, press your finger on the camera icon .



You must be in the respective modes for the above.

System setting

Full screen view

Set the OSD here in the recording and playback mode.





- ▶ Select **Simple** to display just the absolute minimum of information.
- ▶ Select **Normal** to display all information.

Quick start

The quick start function lets you start the camcorder easily and quickly by flipping open the display. If the quick start function is activated and the display is closed, the operating LED will flash green.






Date & Time

Set the date and time here so that your recordings are dated correctly.

- ▶ Touch the field to be changed.
- ▶ Set a value with the buttons **UP**  / **DOWN** .
- ▶ Touch the next field to be changed to select it and continue as described above.
- ▶ Touch , to select the desired date format.
- ▶ To accept the changed settings, press **OK** .


World time

Set the time to another time zone here, such as the time at your travel destination.

- ▶ To set the "home time zone", press the "home time zone" icon .
- ▶ Now press the city listed at top and use **Left** / **Right**  to select the desired time zone.
- ▶ Now press the **Up** / **Down**  buttons to select a city from the chosen time zone and confirm the city by pressing the selected city.






Pressing the  button switches the time to summer time.

- ▶ To set the "vacation time zone", press the "vacation time zone" icon  and continue as for "home time zone".

Language

Set the desired language here.

- ▶ Press the **Up** / **Down**  buttons to page through the listed languages.
- ▶ Select your language simply by tapping the desired language.
- ▶ Confirm by pressing **OK** .

Auto Switching off

Set the time for automatic activation of the standby mode for the camcorder.

- ▶ Select **OFF** to deactivate the automatic switching off.
- ▶ Select **5 min.** to set the automatic switching off time to 5 minutes.



After 1 minute standby time, the camcorder turns off completely.

Signal tone

Set the volume of the signal / button sounds of the camcorder.

- ▶ Select **OFF** to deactivate all camcorder sounds.
- ▶ Select **LOW** to keep the camcorder sounds at a low volume.
- ▶ Select **NORMAL** to keep the camcorder sounds at a normal volume.
- ▶ Select **LOUD** to maximize the volume of the camcorder sounds.

LCD brightness

Set the brightness of the LC display here.

Select Automatic to set the display lighting automatically.

- ▶ Select **DARK** to keep the display lighting low.
- ▶ Select **NORMAL** to keep the display lighting neither too bright nor too dark.
- ▶ Select **BRIGHT** to keep the display lighting bright.



TV output

Set the TV standard of your television set here.

- ▶ Select **NTSC** if you have NTSC TV. NTSC applies to countries such as Japan, the US, Canada, Taiwan and other countries.
- ▶ Select **PAL** if you have PAL TV. PAL applies to countries such as Europe, Oceania and others.

TV format

Set the format of your television set here.

- ▶ Select 4:3  if you want to connect your camcorder to a television format of 4:3.
- ▶ Select 16:9  if you want to connect your camcorder to a television with a 16:9 format.

TV menu

Set the OSD display that the camcorder displays on a connected television here.

- ▶ Select **OFF** to deactivate the OSD during playback to a television.
- ▶ Select **ON** to activate the OSD during playback to a television.

HDMI resolution

Set the resolution for HDMI playback here.

- ▶ Select **AUTOMATIC** so that the camcorder can set the optimal resolution in conjunction with your image playback device.
- ▶ Select **1080i** so that the camcorder can transmit the image in a resolution of 1080i to the image playback device.
- ▶ Select **720p** so that the camcorder can transmit the image in a resolution of 720p to the image playback device.
- ▶ Select **480p** so that the camcorder can transmit the image in a resolution of 480p to the image playback device.

File number

Set file numbering for images here.

- ▶ Select **SERIES** so that the files are numbered consecutively.
- ▶ Select **RESET** so that numbering begins at 0001 as soon as the folder is changed.

Formatting

You can reformat the memory here.

If a memory card is inserted, the card is formatted.

- ▶ Select **FORMAT** and confirm with **YES** to format the inserted storage media.
- ▶ Select **NO** to cancel formatting



CAUTION!

If you format the memory all the data stored there will be deleted.


Make sure that important data are no longer in the memory or on the SD/SDHC card.



Reset all




You can use this function to restore the camcorder's factory settings.

- ▶ Select **RESET ALL** and confirm with **YES** to reset the camcorder to factory settings.
- ▶ Select **NO** to cancel the reset.

Playback menu





To access the playback menu, touch the LC display and press .

The playback menu consists of 2 areas. The upper tabs show the video playback menu  and the photo playback menu .

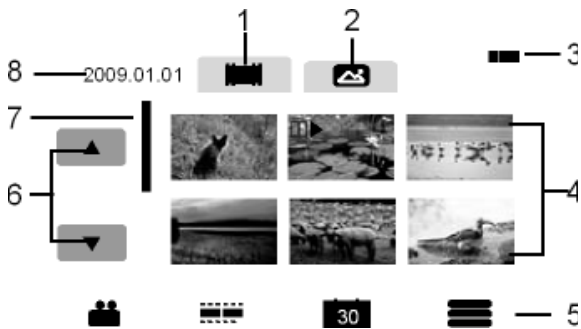
- ▶ In the playback mode, select the video playback by pressing .
- ▶ Press **UP** /**DOWN**  to page.







The video playback menu

The video playback menu shows you all of the videos that are on the card.

- ▶ In playback mode, select video playback by pressing .
- ▶ Press **UP** /**DOWN**  to page.
- ▶ Press  to exit the video playback menu.




In video playback, the camcorder will display the following information:







1	Video tab	Displays video miniature pictures.
2	Photo tab	Displays photo miniature pictures.
3	Batteries	Displays the battery status.
4	Film/Photo overview	Displays videos/photos that are on the memory card. To view the photos or videos in full size, tap the corresponding image.
5	Tool bar	 Back to recording mode,  To the Gallery,  Date index,  Switch to playback menu.
6	Side bar	To call up the previous / next, tap the page.
7	Scrollbar	To page, press UP  / DOWN  .
8	Recording date	Displays the date of the recording

The roll film function

The camcorder has the option of displaying recorded videos in snapshots.

- ▶ Press  to activate the roll film function.
- ▶ Use **UP**  / **DOWN**  to select the desired video.

The first picture of the video is shown with the total run length at the top left of the display.

- ▶ Use  /  to select the desired interval where the snapshots are to be displayed. You can choose between 1 min., 2 min., 3 min., 5 min. or 10 min.
- ▶ Use **LEFT**  / **RIGHT**  to page through the displayed snapshots and to call up the desired point in time of the video.
- ▶ Select the point in time of the video that you want to edit by pressing the desired miniature picture.

You can now edit the video to the desired point in time (as described on p. 46).

List (Date)

The list menu lets you find stored pictures or videos by date.

- ▶ Press **[30]** to call up the list menu.
- ▶ Select the date you recorded the films and confirm by pressing **[OK]**.

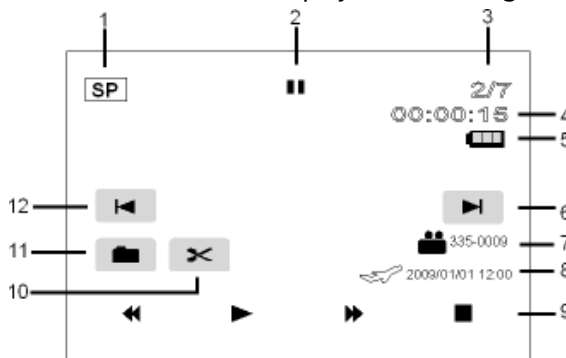
The videos / photos recorded on the selected date will now be displayed.

The video playback

In video playback you will see all of the videos that are on the card.

- ▶ In playback mode, select video playback by pressing **[REVIEW]**.
- ▶ Press **UP** **[↑]** / **DOWN** **[↓]** to page.
- ▶ Press the corresponding video to call it up.
- ▶ Press **[EXIT]** to exit the video playback menu.


In video playback, the camcorder will display the following information:




1	Recording quality	Displays the set recording quality.
2	Pause	Is displayed when playback was paused.
3	Video number	Displays the file number and the total number of videos in the memory.
4	Counter	Displays the current playback time.
5	Batteries	Displays the battery status.
6	Continue	Opens the next stored video.
7	File	Displays the "File Name".
8	Date / time	Displays the date / time, depending on the set time zone.
9	Video player	Rewind, play, forward and stop buttons
10	Cut (only possible in "pause mode".)	Lets you cut the displayed film
11	Photo (only possible in "pause mode".)	Lets you generate a still image from the displayed scene.
12	Back	Opens the previous stored video.

Editing videos

To cut the selected video, proceed as follows:

- ▶ Press **PAUSE**  to pause the video at the time to be edited.



You can now create a photo of this scene, or cut the video at this time.

- ▶ Press **CROP**  to create a photo from the paused scene. The created photo is stored automatically and can be viewed in the photo playback menu.


Deleting, protecting videos


DELETE

To delete videos, proceed as follows:

- ▶ Press  to access the playback menu. Now press  to select the menu for deletion and protection and the card status display.
- ▶ Press **DELETE** to access the delete mode.

Here you can choose to delete All Videos, Videos By Date or selected videos.

- ▶ Press **ALL** to delete all videos. Confirm the security prompt by pressing **YES**.
- ▶ Press **SELECT** to select the videos you want to delete. Now mark the videos to be deleted.
- ▶ Press  and confirm the security prompt by pressing **YES** to delete the selected videos.

Here you can now mark one or several videos for deletion. Videos that are marked for deletion have a  icon. The number of marked files is also shown at the bottom right of the display.

- ▶ Press **BY DATE** to delete all videos by date. Confirm the security prompt by pressing **YES**



If a memory card is inserted you can delete only the films on the memory card.


If the memory card is locked you cannot delete the films on the memory card.


Protect

Here you can protect your videos or photos from accidental deletion.

- ▶ Press **PROTECT** to access the protect menu.

Here you can choose to either Protect All, Protect Selected or Unblock All.

- ▶ Press **PROTECT ALL** and confirm the security prompt by pressing **YES** to protect all videos.
- ▶ Press **SELECT** to select the videos you want to protect. Now mark the videos to be protected.
- ▶ Press  and confirm the security prompt by pressing **YES** to protect the selected videos.

Here you can now mark one or several videos for protection. Videos that are marked for protection have a  icon.


- ▶ Press **UNLOCK ALL** and confirm the security prompt by pressing **YES** to unblock all videos.



Card status




The free and occupied storage space of the memory card can be displayed here.

- ▶ Press **CARD STATUS** to display the storage space.

The photo playback menu





To access the photo playback menu, touch the LC display and press .

The playback menu consists of 2 areas. The upper tabs show the video playback menu  and the photo playback menu .

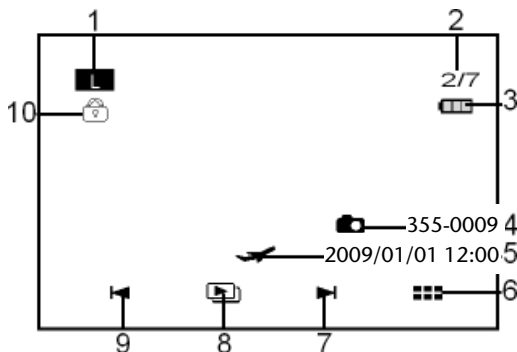
- ▶ In playback mode, select photo playback by pressing .
- ▶ Press **UP** /**DOWN**  to page.

The photo playback

Photo playback will show you all of the photos that are on the card.

- ▶ In playback mode, select photo playback by pressing .
- ▶ Press **UP** /**DOWN**  to page.
- ▶ Press the corresponding video to call it up.
- ▶ Press  to exit the video playback menu.

In video playback, the camcorder will display the following information:



1	Photo size	Displays the photo size.
2	File number	Displays the file number and the total number of pictures in the memory.
3	Batteries	Displays the battery status
4	File name	Displays the name of the current file.
5	Date stamp	Displays the date stamp.
6	Finish	Switches from photo playback menu to the playback menu.
7	Next photo	Pages to the next photo.
8	Slide show	Starts the slide show
9	Previous photo	Pages to the previous photo
10	Protection	Shows that the file is protected.



Enlarging photos

To enlarge a created photo in the LC display of your camcorder, proceed as follows:




- ▶ Press the desired photo to display it.
- ▶ Press the **TELEPHOTO/WIDE ANGLE** toward **T**. You now see an enlarged picture detail.
- ▶ Use the tip of your finger to slide the picture on the display in the desired direction to change the picture detail.

Slide show

To display the created photos individually or as a slide show, proceed as follows:

- ▶ Press the desired photo to display it.
- ▶ Press  /  to page through the photos.

You now have the option of starting the slide show.

- ▶ Press **SLIDE SHOW**  to display all stored photos in a slide show.
- ▶ Press  to pause or continue the slide show.
- ▶ Press  to cancel the slide show and return to the playback menu.





If a memory card is inserted you can delete only the photos on the memory card.

If the memory card is locked you cannot delete the photos on the memory card.

List (Date)

The list menu lets you find stored pictures or videos by date.



- ▶ Press  to call up the list menu.
- ▶ Select the date you shot the photos and confirm by pressing .

The videos / photos recorded on the selected date will now be displayed.


Deleting, protecting photos


DELETE

To delete photos, proceed as follows:

- ▶ Press  to access the playback menu. Now press  to select the menu for deletion and protection and the card status display.
- ▶ Press **DELETE** to access the delete mode.

Here you can choose to delete All Photos, Photos By Date or selected photos.

- ▶ Press **ALL** to delete all photos. Confirm the security prompt by pressing **YES**.
- ▶ Press **SELECT** to select the photos you want to delete. Now mark the photos to be deleted.
- ▶ Press  and confirm the security prompt by pressing **YES** to delete the selected photos.

Here you can now mark one or several photos for deletion. Photos that are marked for deletion have a  icon. The number of marked files is also shown at the bottom right of the display.

- ▶ Press **BY DATE** to delete all photos by date. Confirm the security prompt by pressing **YES**.



If a memory card is inserted you can delete only the photos on the memory card.


If the memory card is locked you cannot delete the photos on the memory card.


Protect

Here you can protect your videos or photos from accidental deletion.

- ▶ Press **PROTECT** to access the protect menu.

Here you can choose to either Protect All, Protect Selected or Unblock All.

- ▶ Press **PROTECT ALL** and confirm the security prompt by pressing **YES** to protect all photos.
- ▶ Press **SELECT** to select the photos you want to protect. Now mark the photos to be protected.
- ▶ Press  and confirm the security prompt by pressing **YES** to protect the selected photos.

Here you can now mark one or several photos for protection. Photos that are marked for protection have a  icon.

- ▶ Press **UNBLOCK ALL** and confirm the security prompt by pressing **YES** to unblock all photos.

Connecting the camcorder to a TV set

- ▶ Connect the black plug of the AV cable to the TV output of the camcorder.
- ▶ Connect the white and yellow plug on the AV cable to the corresponding sockets on the television set.



If you have recorded images in HD format, use an HDMI cable to connect your camcorder to your TV set (if it has a digital input) to view your HD-format photos at a high resolution.

Interval

Here you can select the interval length of the slide show.

- ▶ Press **1 sec.** to set the interval to a time of 1 second.
- ▶ Press **5 sec.** to set the interval to a time of 5 seconds.
- ▶ Press **10 sec.** to set the interval to a time of 10 seconds.

DPOF

DPOF stands for “Digital Print Order Format”. Here you can specify print settings if you wish to have pictures published by a photo studio or printed on a DPOF-compatible printer. With a DPOF-compatible printer you can print the pictures directly without transferring them to the computer beforehand.



- ▶ Press **SELECT** to select the pictures that will be printed to DPOF and confirm the security prompt by pressing **YES**.
- ▶ Press **All** to select All Photos and confirm the security prompt by pressing **YES**.
- ▶ Press **RESET** to reset all DPOF settings and confirm the security prompt by pressing **YES**.

Card status

The free and occupied storage space of the memory card can be displayed here.

- ▶ Press **CARD STATUS** to display the storage space.

Displaying films and photos on the TV set

- ▶ Switch on the television set.
- ▶ Connect the camcorder with the supplied HDMI cable.
- ▶ Connect the camcorder to your television with the supplied AV cable if you are not using an HD-capable television. As long as the camcorder is connected to a TV set, the LC monitor is switched off.
- ▶ Select the film as described on p. 24, or select the photo as described on p. 29.

The recorded images will be displayed on the TV set.

Transferring films and photos to a computer

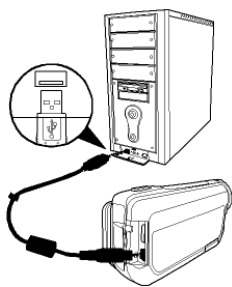
Connect the camcorder to your computer with the supplied USB cable as shown. Your computer will automatically detect the camcorder as removable media.

- ▶ Select **Computer** if the camcorder was connected to a computer,
- ▶ Select **Printer** if the camcorder was connected to a printer.

The films are in MPEG4 format and the photos in JPG format. They are located in the **DCIM/100MOVIE** folder in the internal memory or on your SD/SDHC card.



The folders are created automatically on the SD/SDHC card.



Proceed as follows to transfer your films and photos to your computer for storage or editing:

- ▶ Using the cable supplied, connect the camera to the computer's USB connection.
- ▶ Load the films or photos onto your computer.
- ▶ Log the camera off the computer.
- ▶ Remove the USB cable.

Maintenance and care

Clean the housing, lens and the display as follows:

Clean the camera housing using a soft, dry cloth.

Do not use thinners or cleaning solutions that contain oil. This could damage the camera.

Use a lens brush to remove the dust before cleaning the lens or the display. Then wipe them with a soft cloth. Do not apply pressure on the display and do not use hard objects to clean it .

Do not use strong cleaning solutions for the housing and the lens (contact your dealer if dirt cannot be removed).

Troubleshooting

Fault	Cause	Remedy
The photos/films are blurred.	The lens is dirty.	Clean the lens.
The photos/films have a colour imbalance.	The white balance is not set correctly.	Set the right white balance for the lighting situation.
The photos/films appear in unusual colours.	A special effect is enabled.	Switch off the effect.
The photos/films are too dark or too bright.	An unfavourable flash setting was used to take the photo.	Select a different flash setting.
	The distance from the subject is too great.	Move closer to the subject.
The photos/films cannot be deleted.	Die SD/SDHC-Karte ist gesperrt.	Entsperren Sie die SD/SDHC-Karte.
	The file is locked.	Unlock the file.
The camera will not switch on.	The battery is flat.	Laden Sie den Akku.

Fault	Cause	Remedy
The SD/SDHC card cannot be inserted.	The SD/SDHC card is not inserted correctly in the card slot	Insert the SD/SDHC card correctly
The computer does not recognise the camera.	The camera driver is not installed on the computer.	Install the camera driver.

If

none of these tips help to solve the problem, please contact our service address. You will find the details on the last page of this brochure.

Never attempt to open up the device: there are no internal parts requiring maintenance from the user. Unauthorized repairs will render the warranty null and void.

The information in this document is subject to change without notice.

Technical specifications

Image sensor	10 megapixels
Modes	HD video camera, digital camera
Lens	f = 6.1 – 30.5 mm, 5x optical zoom, 10x digital zoom
Display	3" LCD
TV standard	NTSC/PAL
Data storage media	Card slot for SD (max. 2 GB) or SDHC cards up to (max. 16 GB).
File formats	Picture: JPEG; movie: AVI
Range	<p>Films:</p> <p style="text-align: right;">Normal: 10 cm~ ∞</p> <p>Photo:</p> <p style="text-align: right;">Normal: 30 cm~ ∞</p> <p style="text-align: right;">Macro: 10 cm - infinite</p>
Image resolution	<p>LW: 3264 x 1840 Pixel (16:9)</p> <p>L: 3648 x 2736 Pixel</p> <p>M: 2448 x 1840 Pixel</p> <p>S: 1600 x 1200 Pixel</p>

	HQ: 1920 x 1080 30 Hz SP: 1280 x 720 60 Hz LP: 1280 x 720 30 Hz Web: 640 x 480
PC connection	Mini USB 2.0 connection
Power supply	Lithium-ion battery, 1450 mAh, 3.7 V

Disposal

Packaging



To prevent transport damage, your device is packed in packaging. All packaging materials that are no longer required can and should be recycled.

Appliance



At the end of its life, the appliance must not be disposed of in household rubbish. Seek the advice of your local authority on environmentally friendly disposal facilities.

Batteries



Do not dispose of used batteries in the household rubbish! They must be deposited at a collection point for used batteries.